

# Data Collection and Storage Strategies



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RECLAMATION

# Use of Tablets for Field Work

- USBR working with USACE to employ MICA
- MICA- Mobile Information Collection Application
  - With one device collect:
    - GPS location
    - Photos, Video, Sketches
    - Field or Inspection Data
  - Eliminates paper forms and enables real-time updating
- Pilot Test for CP System Testing:
  - Mni Wiconi WTP, Pierre, SD
  - IC and GA system on >100 miles of pipe
- FY15 Tasks:
  - Expand MICA use to other departments across Reclamation
  - Develop database for long-term storage and analysis of data
    - Likely using USBR GIS Tessel site and DoD-based SDSFIE (with Steve Jalbert from PN)



# Use of Tablets for Field Work

<https://mica.usace.army.mil/login2.aspx?ReturnUrl=%2f>

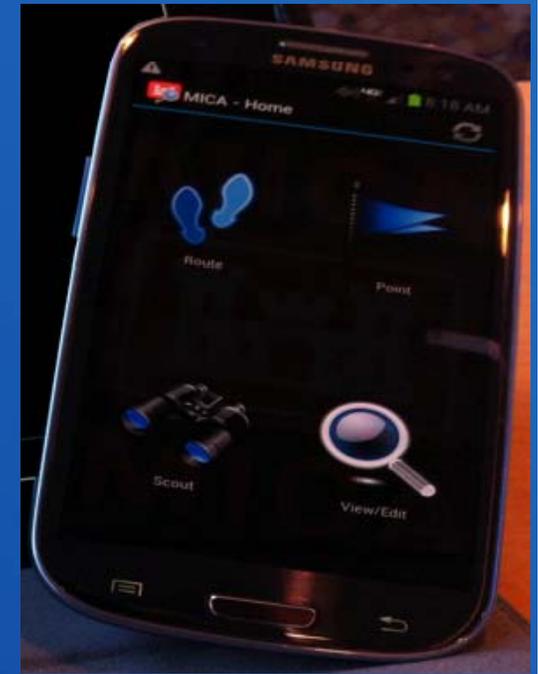
The screenshot displays the MICA web application interface. At the top, the browser address bar shows the URL <https://mica.usace.army.mil/loadcommunity2.html?cid=959874cd-c796-4a87-9874-b8bbaaf618ca>. The page header includes the US Army Corps of Engineers - ERDC logo and the text "Mobile Information Collection Application (MICA)". The main content area is titled "Field Corrosion Survey - 2.2.0" and features a "Map Panel" tab. On the left, a tree view lists "MICA Folders" including "Mni Wiconi WTP- May2014 - 0 points", "Mni Wiconi- May2014- GA System - 13 p", "Mni Wiconi- May2014- IC System - 11 po", "Mni Wiconi- GA System v2 - 323 points", and "Demo Folder - 2 points". The central map displays a 2D view of a field corrosion survey with numerous numbered data points (e.g., 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24) plotted on a satellite map. A zoomed-in inset map shows a detailed view of a river area with red and blue data points. The interface includes navigation controls like a compass and zoom in/out buttons. The bottom of the page shows "Map data ©2014 Google Imagery ©2014 TerraMetrics 5 km" and links for "Terms of Use" and "Report a map error".

# Use of Tablets for Field Work

## Form for Rectifier Testing

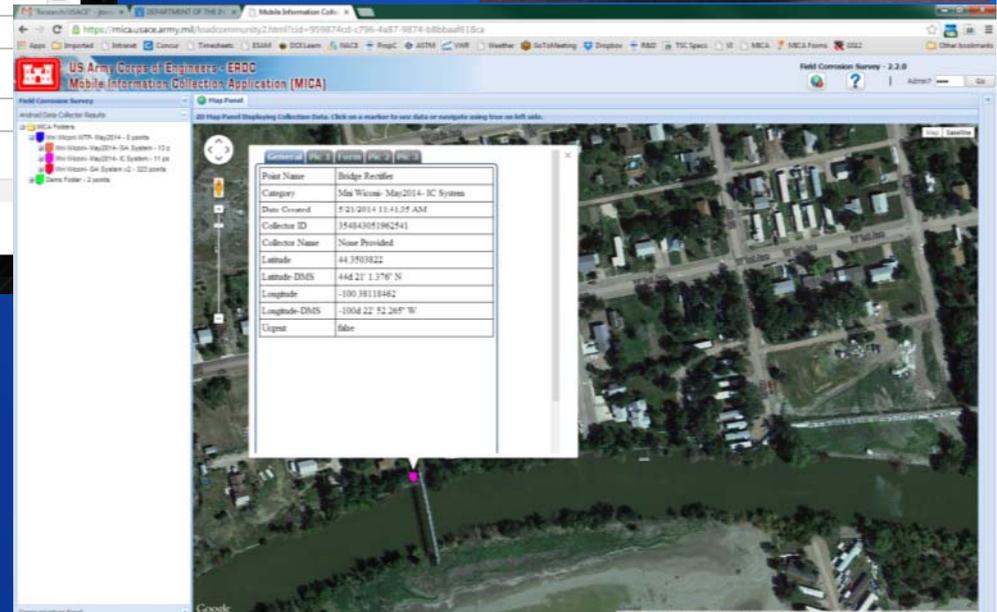
RECTIFIER					
Rectifier Number	Bridge Rectifier	Tap or Dial Setting (Coarse/Fine)	16		
Panel Meter Voltage (V)	4	Panel Meter Current (A)	1.9	Measured Output Voltage (V)	3.458
Measured Shunt (mV)	21.6	Shunt Rating (mV)	10	Shunt Rating (A)	1
JUNCTION BOX					
Anode #1	Shunt Potential (mV)	1.2	Resistor Setting ( $\Omega$ or %)	none	
Anode #2	Shunt Potential (mV)	4.6	Resistor Setting ( $\Omega$ or %)		
Anode #3	Shunt Potential (mV)	5.9	Resistor Setting ( $\Omega$ or %)		

MICA available on tablet and smartphone devices



<https://forms.erd.c.dren.mil/login/>

Web-based Interface for Data Viewing



# Corrosion Infrastructure Database

- **Database of Corrosion Mitigation Installations aims to:**
  - Catalogue types of protected structures and their locations
  - Document corrosion mitigation successes and failures
  - File SOPs for operation and testing of CP systems
  - Share information between organizations
  - Staff turnover (mainly due to retirement) has resulted in loss of knowledge of the existence and O&M requirements for many corrosion mitigation systems. This database would help bridge staff changes with a single go-to location for info on CP systems.
- **Develop database for long-term storage and analysis of data**
  - Store testing data (ex. from MICA), photos, etc. and associate that directly with structure in database
  - Enable reporting of historical testing data on a structure to determine health of structure and corrosion mitigation system
  - Likely using USBR GIS Tessel site and DoD-based SDSFIE

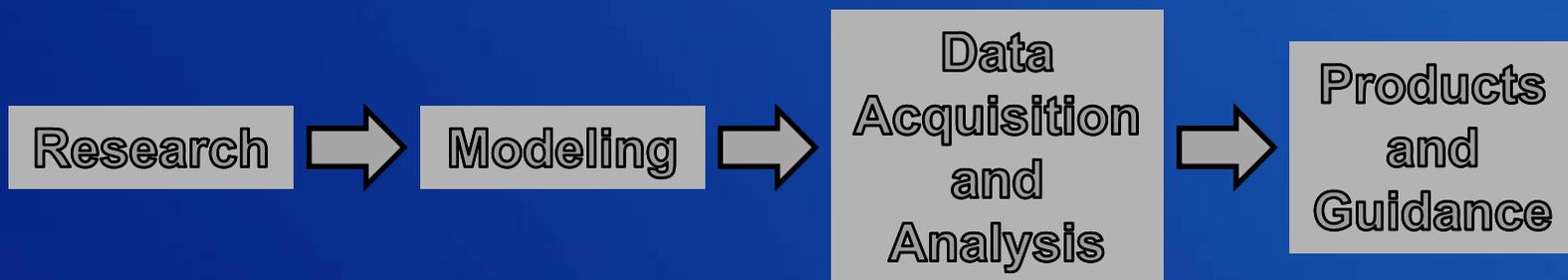
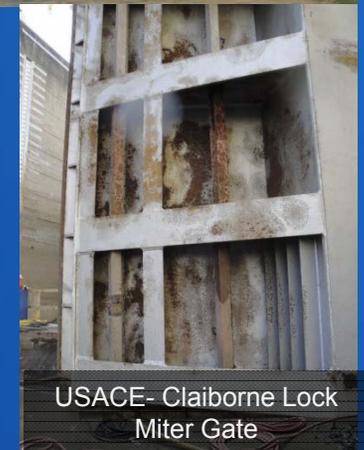
# Corrosion Health Monitoring



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# Improve Efficacy of Monitoring Systems

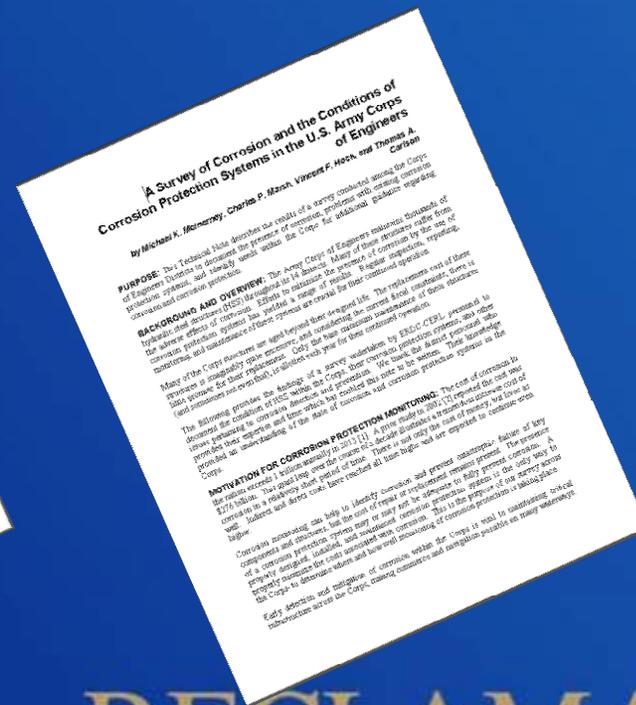
- **Corrosion Detection and Monitoring Systems for Steel Components (USACE name)**
  - Using FEA to improve efficiency of CP systems including anode placement
  - Developing novel sensor for monitoring CP system and coating condition
  - Use remote health monitoring to provide facility managers early warning of potential changes in performance of corrosion mitigation system
  - Collaborative pilot test of monitoring system at USACE/USBR structures



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# Improve Efficacy of Monitoring Systems

- Research Products:
  - USACE- “A Survey of Corrosion and the Conditions of Corrosion Protection Systems in the U.S. Army Corps of Engineers:
  - USBR- “2014 Overview of Bureau of Reclamation Corrosion and Mitigation Issues”



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